HVAC SPECIFICATIONS

- CONTRACTOR SHALL OBTAIN ALL PERMITS AND LICENSES, PAY FEES, AND COMPLY WITH ALL LAWS, ORDINANCES, RULES AND REGULATIONS BEARING ON THE CONDUCT OF THE WORK AS SHOWN AND/OR SPECIFIED.
- 2. ALL WORK SHALL COMPLY WITH LATEST EDITIONS AS ADOPTED BY GOVERNING AUTHORITY OF THE UNIFORM MECHANICAL CODE, THE UNIFORM PLUMBING CODE, ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES AND REQUIREMENTS.
- 3. ASBESTOS PRODUCTS OR EQUIPMENT OR MATERIALS CONTAINING ASBESTOS SHALL BE PROHIBITED.
- 4. COMPLY WITH ALL OF THE RECOMMENDATIONS SET FORTH IN THE LATEST EDITION OF THE MANUALS PUBLISHED BY THE "SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA).
- 5. CONTRACTOR SHALL CONFORM WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS FOR INSTALLATION AND OPERATION OF MECHANICAL ITEMS. THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY CONDITION WHICH (1) MAY IMPAIR THE FUNCTIONING OF EQUIPMENT OR VOID THE MANUFACTURER'S WARRENTY AND (2) CONFLICTS WITH LOCAL REGULATIONS/CODES.
- 6. TESTS AND ADJUSTMENTS
- A. ADJUST AIR SYSTEM TO OBTAIN UNIFORM TEMPERATURES AND TO ELIMINATAE DRAFTS.
- 7. PROVIDE ONE (1) OPERATING MANUAL HAVING FOR EACH AND EVERY PIECE OF EQUIPMENT FURNISHED COPIES OF ALL OPERATING INSTRUCTIONS, BULLETINS, OPERATING SHEETS AND PARTS SHEETS; AND CERTIFICATES OF WARRANTY AND/OR GUARANTEE WITH ALL NECESSARY INFORMATION FILLED IN COMPLETELY.
- 8. PROVIDE ONE (1) SET OF RECORD DRAWINGS SHOWING ACCURATE AS—BUILT WORK IN A NEAT MANNER. RECORD LOCATIONS OF UNDERGROUND PIPING, BOTH INSIDE AND OUTSIDE OF BUILDING, BY INVERT ELEVATION AND DIMENSION TO FOUNDATION WALLS AND FINISHED FLOOR/GRADE ELEVATIONS.
- 9. PROVIDE PERSONAL WRITTEN GUARANTEE AGAINST FAULTY WORKMANSHIP AND MATERIAL, GOOD FOR ONE YEAR FROM DATE OF ACCEPTANCE BY OWNER.
- 10. ELECTRICAL REQUIREMENTS: WORK UNDER THIS DIVISION OF THE SPECIFICATIONS
 - A. MATERIALS AND INSTALLATION SHALL CONFORM TO DIVISION 16, ELECTRICAL.

 B. MOTORS SHALL BE DESIGNED SPECIFICALLY FOR THE VOLTAGE PROVIDED.

 BUILT—IN OVERLOAD PROTECTION AND DISCONNECT SWITCH ON ALL EXHAUST FANS AND PACKAGED EQUIPMENT SHALL BE PROVIDED.
 - C. FURNISH AND INSTALL ALL MISCELLANEOUS THERMOSTATS, RELAYS, SWITCHES AND CONTROLS FOR PROPER OPERATION OF SYSTEMS.
 - D. SUPERVISE INSTALLATION OF ALL <u>POWER</u> WIRING (LINE VOLTAGE) REQUIRED FOR THE SYSTEMS.
 - E. ALL LINE VOLTAGE (120V) AND LOW VOLTAGE (24V AND BELOW) <u>CONTROL</u>
 AND <u>INTERLOCK</u> WIRING. INSTALL ALL CONTROL WIRING IN CONDUIT OR EMT.
 CONDUIT AND WIRING INSTALLATION SHALL CONFORM TO DIVISION 16, ELECTRICAL.
- 11. RELATED WORK UNDER THE ELECTRICAL DIVISION OF THE SPECIFICATIONS
 A. ALL LINE VOLTAGE (120 VOLTS AND ABOVE) POWER WIRING, CONDUIT AND
 CONNECTIONS FOR POWER SUPPLY TO MECHANICAL EQUIPMENT (MOTORS,
 ELECTRIC HEATING ELEMENTS, ETC.) AND TO CONTROL PANELS, EQUIPMENT
 CONTROLS OR TO JUNCTION BOXES IN THE VICINITY OF CONTROL CIRCUITS
 REQUIRING A SEPARATE POWER SUPPLY.
 - B. FURNISH AND INSTALL MAGNETIC AND MANUAL STARTERS, EXCEPT AS FURNISHED AS PART OF EQUIPMENT PACKAGE.

- 12. DUCTWORK:
- A. MATERIALS SHALL BE GALVANIZED STEEL OF GAGES CONFORMING TO SMACNA STANDARDS FOR 2" STATIC, EXCEPT THAT EXHAUST DUCT SHALL CONFORM FOR 1/2" STATIC PRESSURE.
- B. ALL SIZES SHOWN ON THE DRAWINGS ARE NET AIR PASSAGE SIZES. C. ROUND DUCTWORK MAY BE USED IN LIEU OF RECTANGULAR DUCTS SHOWN.
- D. DUCTWORK SHALL BE SUPPORTED AND BRACED ACCORDING TO SMACNA DUCT MANUAL WITH STRAP-TYPE DUCT HANGERS.
- E. WHEREVER OBSTRUCTIONS REQUIRE CHANGES IN DUCT SHAPES, MAINTAIN EQUIVALENT AREA.
- F. PROVIDE MANUAL VOLUME DAMPERS AS SHOWN ON PLANS AND INCLUDING IN EACH BRANCH TO A SUPPLY AND RETURN REGISTER OR GRILLE. FOR ROUND DUCTS, PROVIDE BUTTERFLY DAMPER. FOR RECTANGULAR DUCTS, PROVIDE OPPOSED BLADE DAMPER.

 FOR DUCTS IN NON—ACCESSIBLE AREAS PROVIDE VENTLOK #677 CONCEALED DAMPER OPERATOR, CHROME PLATED COVER, ALL ITEMS COMPLETE WITH END BEARINGS, EXTENSIONS, COUPLINGS, GEAR ANGLE DRIVES, ETC. FOR DUCTS IN OTHER AREAS PROVIDE VENTLOK #637 FOR DUCTS WITH INSULATION AND #635 FOR NON—INSULATED DUCTS, ALL WITH #636 SPRING END BEARINGS.
- 13. NOT USED
- 14. LOW VELOCITY FLEXIBLE DUCTWORK: CONTRACTOR MAY USE FLEXIBLE DUCTWORK TO CONNECT SYSTEM TO THE SUPPLY DIFFUSERS ONLY. MAXIMUM LENGTH OF FLEX DUCT IN ANY RUN IS 5'-0". FLEXIBLE DUCT SHALL BE U.L. LISTED AND LABELLED AS A CLASS 1 AIR DUCT PER STANDARD UL-181.
- 15. FLEXIBLE CONNECTIONS: SUPPLY AND RETURN DUCT SHALL BE CONNECTED TO THE EQUIPMENT BY MEANS OF A FLEXIBLE CONNECTION, VENTFABRICS 'VENTGLAS', UL APPROVED WITH METAL ATTACHMENT OR OTHER APPROVED MATERIAL.
- 16. FILTERS: SUPPLY AIR SHALL BE FILTERED BEFORE ENTERING OCCUPIED AREA. WHERE FILTERS ARE NOT INTEGRAL TO EQUIPMENT, PROVIDE 1" THROWAWAY FILTERS IN SHEET METAL FILTER RACK FABRICATED PER SMACNA STANDARDS.
- 17. INSULATION:
- A. ALL INSULATION MATERIALS, ADHESIVES, COATINGS AND OTHER ACCESSORIES SHALL HAVE, AS INSTALLED, A FIRE HAZARD RATING NOT TO EXCEED 25 FOR FLAME SPREAD AND 50 FOR FUEL CONTRIBUTED AND SMOKE DEVELOPED AS DETERMINED BY ASTM 84, NFPA NO. 255 OR UL 723. MANUFACTURER'S: MANVILLE, OWENS—CORNING FIBERGLAS, CSG OR EQUAL. THE APPLICATION RECOMMENDATIONS AND INSTRUCTIONS OF THE MANUFACTURER ARE OF THE ESSENCE OF THIS SPECIFICATION AND ARE INCORPORATED HEREIN BY REFERENCE.
- B. MATERIALS
- 1. DUCT WRAP: FLEXIBLE GLASS FIBER BLANKET INSULATION WITH FACTORY APPLIED VAPOR BARRIER FOIL FACING. MANVILLE "MICROLITE" (1.0 PCF) WITH FSK FACING.
- 2. DUCT LINER: FLEXIBLE FIBERGLASS DUCT LINER HAVING AIR STREAM SURFACE PROTECTED WITH ACRYLIC TREATMENT AND PROCESSED FOR A DARK APPEARANCE. MANVILLE "PERMACOTE LINACOUSTIC".
- C. INSULATION SCHEDULE:
- 1. SUPPLY AND RETURN DUCTWORK: 2" THICK WHERE OUTSIDE OF BUILDING INSULATION ENVELOPE OTHERWISE 1" THICK. INSTALL LINER WITHIN 10' OF OF AIR MOVING EQUIPMENT OTHERWISE INSTALL DUCT WRAP.

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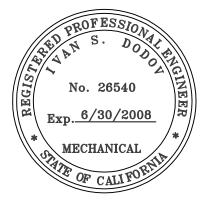
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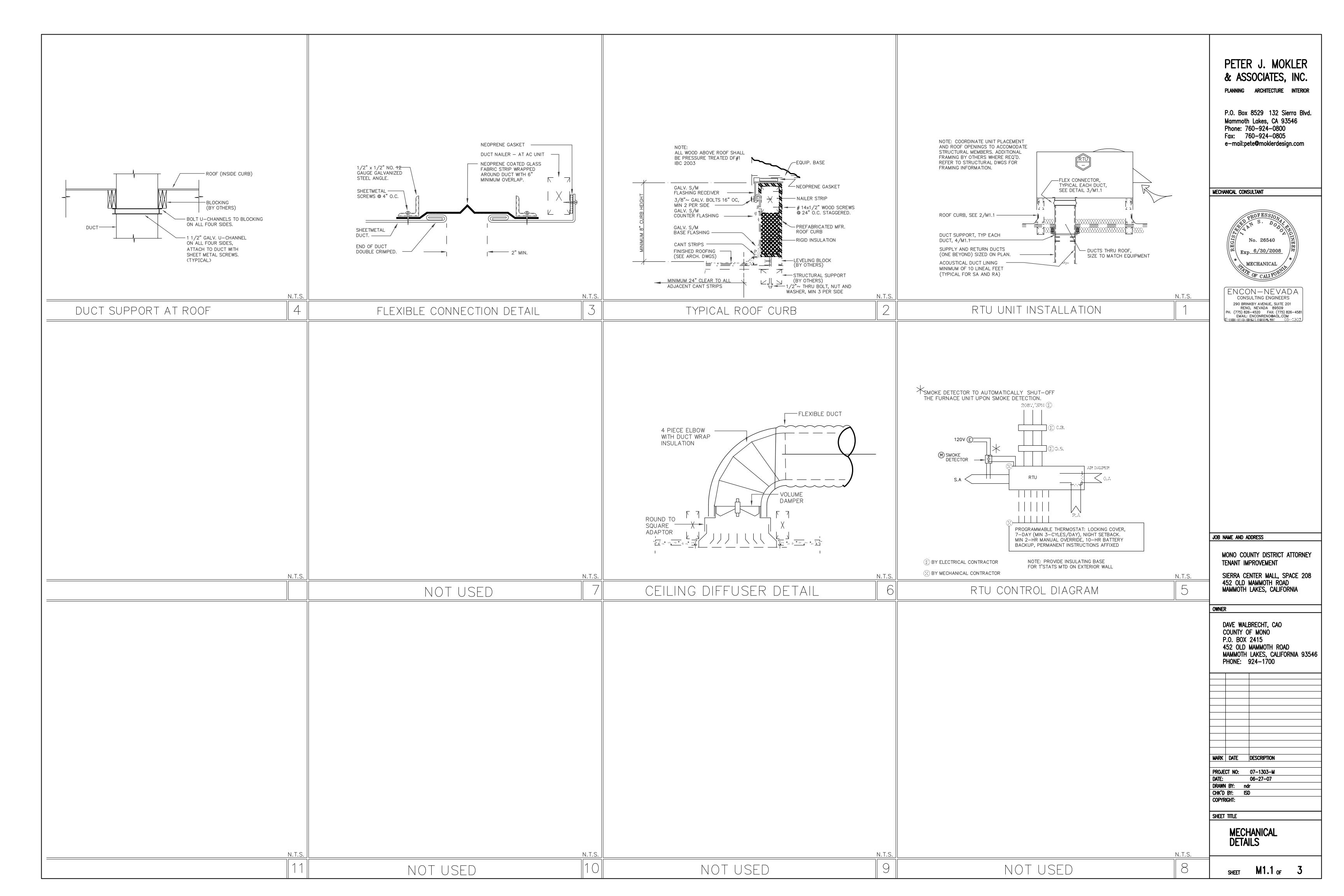
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MECHANICAL SPECIFICATIONS

SHEET M1.0 OF 3



MECHANICAL EQUIPMENT SCHEDULE MARK SPECIFICATIONS GAS/ELECTRIC ROOFTOP UNIT MFR.: CARRIER LOCATION: ROOF SERVICE: OFFICE AREA MODEL NO.: 48HJ007 NOMINAL TONS: 6 O.A.: SEE SCHEDULE QTY.: 2400 CFM @ 1.20" S.P., 6 TONS COOLING, 115 (92) MBH PROPANE GAS INPUT (OUTPUT)—TWO STAGE HEAT UNIT PERFORMANCE SHALL BE SELECTED @ 7,000 FT ELEVATION. CAPACITY: munimum munimum ELECTRICAL: 460V/3~/60HZ, 15.2 MCA, 20.0 MOCP ACCESSORIES: BELT DRIVE SYSTEM, O.A. HOOD, FACTORY CURB, FILTER RACK, PROPANE CONVERSION KIT, TIME GUARD II, LOW AMBIENT CONTROLS, DISCONNECT SWITCH, ELECTRONIC PROGRAMMABLE THERMOSTAT. OP. WEIGHT: 600 lbs. PROVIDE SMOKE DETECTOR AND AUTO SHUTOFF IN THE MAIN SUPPLY AIR DUCT. SET MINIMUM O.A. PER SCHEDULE.

NOTE: SITE ELEVATION IS 4400' ABOVE SEA-LEVEL. DE-RATE EQUIPMENT ACCORDINGLY

NOTE: INSTALL EQUIPMENT IN COMPLETE ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

NOTE: SCHEDULED E.S.P EXCLUDES ALL ACCESSORY ITEMS. ADJUST FAN T.S.P. ACCORDINGLY

AND PROVIDE ANY MANUFACTURER RECOMMENDED ACCESSORIES FOR THIS ELEVATION.

AIR OUTLETS SCHEDULE								
SYMBOL	MANUFACTURER	MODEL#	NECK SI	ZE FACE	PATTERN	OBD	FINISH	REMARKS
	METALAIRE	5000-2	6" x 6"	8" x 8"	4-WAY	YES	STD. WHITE	SURFACE MOUNT
2	METALAIRE	5000-2	8" x 8"	10" x 10"	4-WAY	YES	STD. WHITE	SURFACE MOUNT
3	METALAIRE	5000-2	10" x 10"	12" x 12"	4-WAY	YES	STD. WHITE	SURFACE MOUNT
4	METALAIRE	5000-2	12" x 12"	14" x 14"	4-WAY	YES	STD. WHITE	SURFACE MOUNT
(5)	NOT USED							
6	METALAIRE	RP	10" × 10"	12" x 12"	PERF RTN	NO	STD. WHITE	SURFACE MOUNT
7	METALAIRE	RP	18" x 18"	20" x 20"	PERF RTN	NO	STD. WHITE	SURFACE MOUNT

NOTES: 1. NOT USED

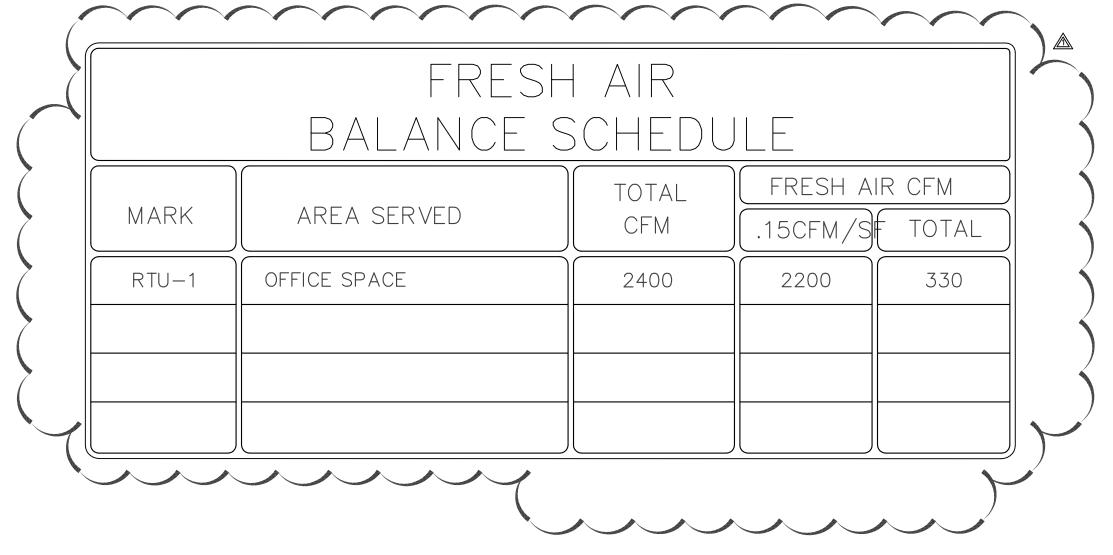
- 2. ROUND NECK ADAPTER (WHERE APPLICABLE) SHALL BE ONE SIZE LARGER THAN BRANCH DUCT SIZE INDICATED ON PLAN.
- 3. VERIFY CEILING WITH ARCHITECT AND PROVIDE FRAME TO MATCH CEILING.
- 4. PROVIDE HARD CEILING FRAME (AS APPLICABLE).

NOTE: PRIOR TO ORDERING, CONTRACTOR SHALL VERIFY AND COORDINATE ELECTRICAL

CHARACTERISTICS (i.e., VOLTAGE, ETC.) WITH ELECTRICAL CONTRACTOR IN

ORDER TO INSURE COMPATIBILITY BETWEEN AC MOTORS AND AVAILABLE POWER.

MECHANICAL LEGEND					
	-	DUCT, FIRST SIZE IS SIDE SHOWN	~	RD	ROUND
		SUPPLY / RETURN DUCT UP	\$	CFM	CUBIC FEET PER MINUTE
		SUPPLY / RETURN DUCT DOWN		CA	COMBUSTION AIR
		CEILING DIFFUSER		OSA	OUTSIDE AIR
		CEILING RETURN		SA	SUPPLY AIR
		CEILING EXHAUST FAN		RA	RETURN AIR
	VD	MANUAL VOLUME DAMPER		EXA	EXHAUST AIR
•			_		FROM BELOW
\bigcirc	FLEX.D.	FLEXIBLE DUCT		T.A.	TO ABOVE
\bigcirc	T'STAT	THERMOSTAT			
S	SENSOR	ROOM SENSOR			



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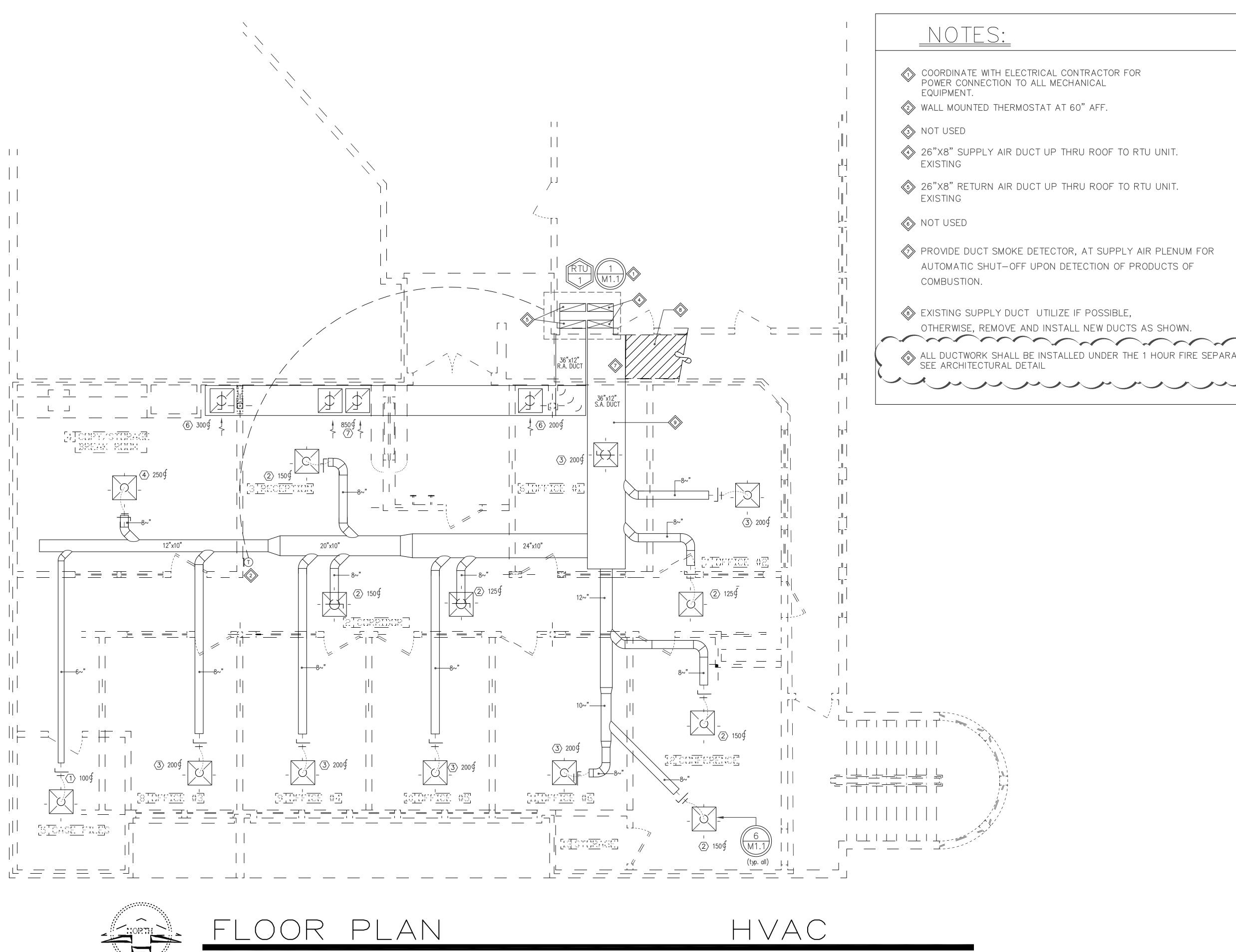
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MECHANICAL SCHEDULE

SHEET M2.0 OF 3



SCALE

1/4'' = 1'-0''

- COORDINATE WITH ELECTRICAL CONTRACTOR FOR POWER CONNECTION TO ALL MECHANICAL
- WALL MOUNTED THERMOSTAT AT 60" AFF.
- 26"X8" SUPPLY AIR DUCT UP THRU ROOF TO RTU UNIT.
- 26"X8" RETURN AIR DUCT UP THRU ROOF TO RTU UNIT.
- PROVIDE DUCT SMOKE DETECTOR, AT SUPPLY AIR PLENUM FOR AUTOMATIC SHUT-OFF UPON DETECTION OF PRODUCTS OF
- EXISTING SUPPLY DUCT UTILIZE IF POSSIBLE, OTHERWISE, REMOVE AND INSTALL NEW DUCTS AS SHOWN.
- ALL DUCTWORK SHALL BE INSTALLED UNDER THE 1 HOUR FIRE SEPARATION SEE ARCHITECTURAL DETAIL

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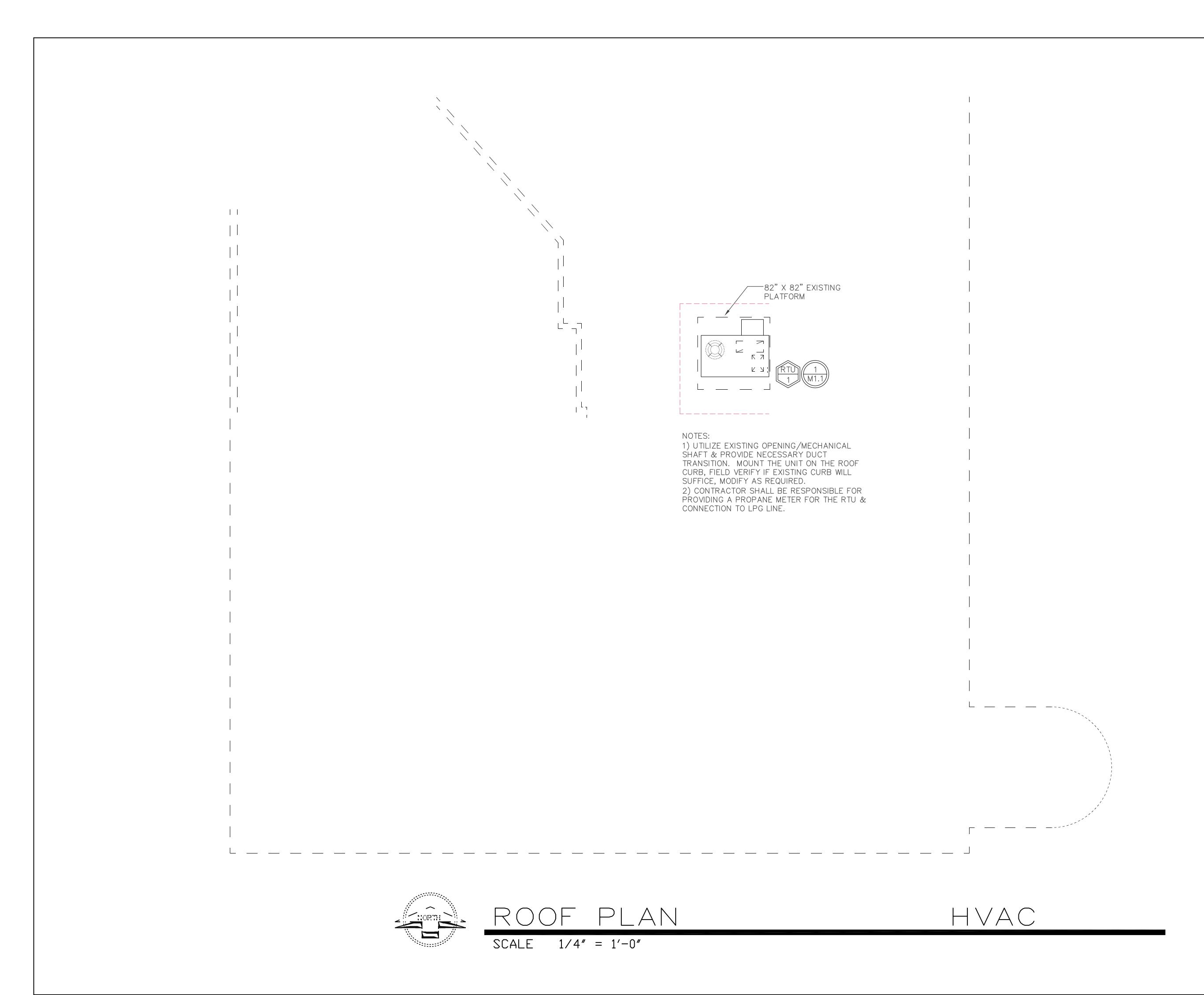
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MECHANICAL FLOOR HVAC PLAN

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SHEET TITLE

MECHANICAL ROOF PLAN

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